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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,713	08/25/2003	Jonathan Stamler	102258.121 US3	9858
7590	07/24/2006		EXAMINER	
Hollie L. Baker HALE AND DORR, LLP 60 State Street Boston, MA 02109			GHALI, ISIS A D	
			ART UNIT	PAPER NUMBER
			1615	

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/646,713	STAMLER ET AL.
Examiner	Art Unit	
Isis Ghali	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 21 April 2006 .

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1,5-8,12-15,19-22,26-29 and 33-35 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1,5-8,12-15,19-22,26-29 and 33-35 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)  The proposed drawing correction filed on \_\_\_\_\_ is: a)  approved b)  disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)  The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All b)  Some \* c)  None of:

1.  Certified copies of the priority documents have been received.
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)  The translation of the foreign language provisional application has been received.

15)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)      4)  Interview Summary (PTO-413) Paper No(s). \_\_\_\_ .  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)      5)  Notice of Informal Patent Application (PTO-152)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s)      6)  Other: \_\_\_\_\_

## DETAILED ACTION

The receipt is acknowledged of applicants' amendment filed 04/21/2006.

Claims 2-4, 9-11, 16-18, 23-25, 30-32 have been canceled. Claims 1, 5-8, 12-15, 19-22, 26-29, and 33-35 are pending and included in the prosecution.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 5-8, 12-15, 19-22, 26-29, and 33-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. To satisfy the Written description requirement, applicant must convey with reasonable clarity to one skilled in the art, as of the filing date that applicant were in possession of the claimed invention. Applicants' claims are drawn to ACE inhibitor which has at least one  $-O-NO_2$  group. The specification gives no guidance to one skilled in the art for description of ACE inhibitor which has at least one  $-O-NO_2$  group and no structure given to ACE

inhibitor has at least one  $-O-NO_2$  group. With careful recourse to the specification, the examiner notices that at pages 17-21 applicants disclosed ACE inhibitors, however, none of the disclosed ACE inhibitors has  $-O-NO_2$  group. The disclosed ACE inhibitors on pages 17-21 all have NO (nitroso- group). On the other hand, on page 23 applicants disclose NO (nitric oxide) adducts that have  $-O-NO_2$  group and they do not include any ACE inhibitors. Clarification is requested. Nowhere applicants have described ACE inhibitor has at least one  $-O-NO_2$ .

3. Claims 1, 5-8, 12-15, 19-22, 26-29, and 33-35 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for method for inhibiting adverse effects associated with use of medical device in patient wherein the device include nitric oxide adduct for local delivery at the site of contact of a device or instrument containing NO with the blood, does not reasonably provide enablement for inhibiting platelets deposition in a patient in general, not at the site of contact of device and blood, by any other local routes of administration of NO. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in *In re Wands*, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are: the nature of the invention; the breadth of the claims; the state of the prior art; the relative skill of those in the art; the amount of direction or guidance presented; the predictability or

unpredictability of the art; the presence or absence of working examples; and the quantity of experimentation necessary. When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation.

**The nature of the invention:** The nature of the invention is method for inhibiting platelets aggregation in a patient by administering NO adduct locally.

**The breadth of the claims:** The claims are broad. The claims encompass all method of inhibiting platelets aggregation in a patient that encompasses any site where platelets can aggregates, and all inhibited by local administration of NO including, transdermal, implant, or rectal, etc. The claims also encompass inhibiting of platelets aggregation in any organ and caused by any causes. The entire specification disclosed local delivery of NO from devices or instruments contacting the blood, page 5, 14 and 15. Nowhere in the specification applicants disclosed other methods for administering NO. The specification also does not disclose inhibiting platelet aggregation any where in the patient, but only at site of contact of medical device with blood.

**The state of the prior art:** The state of the art recognized the inhibitory effects of NO on platelets aggregation by administering NO adduct such as ACE inhibitors intravenously, transdermally, orally, or as a suppository, US 5,002,964 and US 5,025,001. However, the art does not recognized NO adduct containing nitrate group administered as a coating, incorporation in the material or as derivatizing to the surface of the medical devices and instrument.

**The relative skill of those in the art:** The relative skill of those in the art is high.

**The amount of direction or guidance presented:** The specification provides no guidance, in the way written description, on inhibiting platelets deposition in a patient other than platelets deposition associated with use of medical devices or instruments that contact the blood. The specification provides no guidance, in the way written description, on the administration of NO by local routes other than inclusion in devices and instruments that contact the blood as coating, inclusion in the material of the device, or by derivatizing the surface of the device, page 5, lines 23-30. It is not obvious from the disclosure of inhibiting platelets aggregation associated with the use of medical devices that contact the blood that platelets aggregation in general, such as brain clots, will be inhibited in a patient by using such devices and instruments. It is not obvious from the disclosure of delivery of NO by inclusion in devices and instruments that contact the blood if the other methods of local administration will provide the same platelets aggregation inhibitory effect. It must appear in an applicant's specification either by the enumeration of a sufficient number of administration methods or by other appropriate language, that other methods of administration encompassed by the claims are capable of accomplishing the desired result. A disclosure should contain representative examples which provide reasonable assurance to one skilled in the art that the administration methods fall within the scope of a claim will possess the alleged activity.

**The predictability or unpredictability of the art:** The lack of guidance from the specification and from the prior art with regard to inhibiting platelets aggregation in a patient using NO adduct by local administration in or on a medical device makes

practicing the claimed invention unpredictable in the terms of the method of inhibiting platelets deposition and method of administration of NO adduct.

**The presence or absence of working examples:** The specification discloses method of inhibiting platelets deposition associated with the use of medical devices only, and not all causes of platelets aggregation. The specification disclosed NO adduct included in devices or instruments that contact patient's blood. Therefore, the specification has enabled inhibiting platelets deposition in a patient associates with use of medical devices or instruments that contact the blood. Additionally, the specification has enabled local administration of NO by inclusion in devices and instruments contacting blood as shown by the examples as a coating, inclusion in the material of the device or by derivatizing the surface of the device.

**The quantity of experimentation necessary:** Therefor, the practitioner would turn to trial and error experimentation to practice the instant method for inhibiting all platelets aggregation in a patient from different causes by all known methods of local administration of drugs without guidance from the specification or the prior art. Therefore, undue experimentation becomes the burden of the practitioner.

4. Claims 5-7, 12-14, 19-21, 26-28, and 33-35 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for administration of antithrombogenic compounds in combination with NO adduct in the medical devices as set forth, wherein the antithrombogenic compounds include hirudin, heparin, warfarin, aspirin, indomethacin, dipyridamole, prostacyclin, prostaglandin E, sulfinpyrazone,

ticlopidine and clopidogrel, does not reasonably provide enablement for any other antithrombogenic agents such as phenothiazine, RGD peptide RDG peptide mimetic, an agent that blocks platelet glycoprotein IIb-IIIa receptor; or any claimed therapeutic agent as platelet deposition inhibitors including monoclonal antibody, a fragment of recombinant human protein, viral vector, or anti-sense molecule. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in *In re Wands*, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are: the nature of the invention; the breadth of the claims; the state of the prior art; the relative skill of those in the art; the amount of direction or guidance presented; the predictability or unpredictability of the art; the presence or absence of working examples; and the quantity of experimentation necessary. When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation.

**The nature of the invention:** The nature of the invention is method for inhibiting platelets aggregation by administering NO adduct locally and further administering at least one antithrombogenic compound or a therapeutic agent. The entire specification disclosed local delivery of antithrombogenic compound combined with NO adduct incorporated on or in the surface of devices or instruments contacting the blood, page 29-30. Nowhere in the specification applicants disclosed antithrombogenic including

phenothiazine, RGD peptide RDG peptide mimetic, an agent that blocks platelet glycoprotein IIb-IIIa receptor; or any claimed therapeutic agent as effect as platelet deposition inhibitors including monoclonal antibody, a fragment of recombinant human protein, viral vector, or anti-sense molecule, or administration of these compounds not with the NO adduct included in the medical devices that contact the blood.

**The breadth of the claims:** The claims are broad. The claims encompass all method of administering any antithrombogenic compounds and any therapeutic agents separately and independently from the NO adduct and by any routes including intravenous, infusion, transdermal, implant, rectal or oral, etc.

**The state of the prior art:** The state of the art recognized the antithrombogenic effect of aspirin, prostaglandin, etc. on platelets aggregation, however, the art does not recognized administration of antithrombogenic compounds with NO adduct containing nitrate group in or on medical devices and instrument. The art does not recognize the antithrombogenic effect of phenothiazine, RGD peptide RDG peptide mimetic, an agent that blocks platelet glycoprotein IIb-IIIa receptor; or any of monoclonal antibody, a fragment of recombinant human protein, viral vector, or anti-sense molecule.

**The relative skill of those in the art:** The relative skill of those in the art is high.

**The amount of direction or guidance presented:** The specification provides no guidance, in the way written description, on therapeutic agents administered with NO adduct to use of medical devices or instruments that contact the blood other than antithrombogenic compounds including hirudin, heparin, warfarin, aspirin, indomethacin, dipyridamole, prostacyclin, prostaglandin E, sulfinpyrazone, ticlopidine and clopidogrel.

The specification provides no guidance, in the way written description, on the administration of therapeutic agent or any other antithrombogenic compounds, such as phenothiazine, RGD peptide RDG peptide mimetic, an agent that blocks platelet glycoprotein IIb-IIIa receptor; or any of monoclonal antibody, a fragment of recombinant human protein, viral vector, or anti-sense molecule, with NO adduct by inclusion in devices and instruments that contact the blood as coating, inclusion in the material of the device, or by derivatizing the surface of the device, page 29 and 30. It is not obvious from the disclosure of specific antithrombogenic compounds if other compounds or other therapeutic agents would be suitable to be included in the medical devices combined with NO adduct and what function they would provide with regard to the inhibition of platelets deposition. It must appear in an applicant's specification either by the enumeration of a sufficient number of therapeutic agents or by other appropriate language, that other therapeutic agents encompassed by the claims are capable of accomplishing the desired result. A disclosure should contain representative examples which provide reasonable assurance to one skilled in the art that the administration methods fall within the scope of a claim will possess the alleged activity.

**The predictability or unpredictability of the art:** The lack of guidance from the specification and from the prior art with regard to inhibiting platelets aggregation in a patient using NO adduct in or on a medical device and further administering antithrombogenic compound including phenothiazine, RGD peptide RDG peptide mimetic, an agent that blocks platelet glycoprotein IIb-IIIa receptor; or therapeutic agent including monoclonal antibody, a fragment of recombinant human protein, viral vector,

or anti-sense molecule, makes practicing the claimed invention unpredictable in the terms of what other antithrombogenic compounds or therapeutic agents and their route of administration combined with NO adduct-containing devices.

**The presence or absence of working examples:** The specification discloses method for inhibiting platelets aggregation by administering NO adduct locally in or on a medical device and further administering at least one antithrombogenic compound including hirudin, heparin, warfarin, aspirin, indomethacin, dipyridamole, prostacyclin, prostaglandin E, sulfinpyrazone, ticlopidine and clopidogrel combined with NO adduct on or in the surface of devices or instruments contacting the blood. Nowhere in the specification applicants disclosed other antithrombogenic agents or other therapeutic agents, or administration of these compounds not with the NO adduct included in the medical devices that contact the blood. Therefore, the specification has enabled antithrombogenic compound including hirudin, heparin, warfarin, aspirin, indomethacin, dipyridamole, prostacyclin, prostaglandin E, sulfinpyrazone, ticlopidine and clopidogrel combined with NO adduct incorporated in or on medical devices or instruments contacting the blood, and does not enable other antithrombogenic compounds or any therapeutic agents, or administration of the antithrombogenic compounds separately from the NO adduct on or in the medical device contacting the blood.

**The quantity of experimentation necessary:** Therefor, the practitioner would turn to trial and error experimentation to practice the instant method for inhibiting platelets aggregation using NO adduct on or in the medical devices and further

administering therapeutic agent. Therefore, undue experimentation becomes the burden of the practitioner.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 6-7, 13-14, 20-21, 27-28, and 34-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The expressions "RGD peptide", "RDG peptide mimetic", "agent that blocks platelet glycoprotein IIb-IIIa receptors", "monoclonal antibody", "fragment of recombinant human protein", "viral vector", or "anti-sense molecule" do not set forth the metes and bounds of the claim. Recourse to the specification does not define the expressions.

#### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 8, 15, 22 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,025,001 ('001).

US '001 disclosed method for treating myocardial infarction, angina pectoris, and vascular thrombosis by administering ACE inhibitors having the same structures disclosed by applicants locally, i.e. transdermally, to inhibit platelet aggregation (abstract; col.8, line 31-col.15, line 53; col.17, lines 1-2; col.25, lines 58-60, 69).

9. Claims 1, 8, 15, 22 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,002,964 ('964).

US '964 disclosed method for inhibiting platelet aggregation and treating myocardial infarction, angina pectoris, and vascular thrombosis by administering ACE inhibitors having the same structures disclosed by applicants locally, i.e. transdermally or as a suppository (abstract; col.4, line 31-col.9, line 34).

#### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 5-7, 12-14, 19-21, 26-28 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of US '001 or US '964 in view of Fuster et al.

The teachings of US '001 and US '964 are discussed above.

However, the references do not teach the administration of other active agent along with the NO adduct.

Fuster et al teach anticoagulant including aspirin, prostaglandin and heparin have anti-platelet aggregation effect (the entire document).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to deliver ACE inhibitor locally to inhibit platelets aggregation as disclosed by any of US '001 and US '964, and add anticoagulant to the ACE inhibitors as disclosed by Fuster, motivated by the teaching of Fuster that anticoagulant have anti-platelets aggregation effect, with reasonable expectation of having synergistic inhibiting platelets aggregation effect using both ACE inhibitors and anticoagulant locally.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isis Ghali whose telephone number is (571) 272-0595. The examiner can normally be reached on Monday-Thursday, 7:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isis Ghali  
Examiner  
Art Unit 1615

IG

*Isis Ghali*

**ISIS GHALI**  
**PATENT EXAMINER**